

THE LANGUAGE OF



FIRE SUPPORT

LIEUTENANT COLONEL ROBERT D. SANDER

The synchronization of fire support is dependent upon the ability of a maneuver commander and his fire support officer (FSO) to communicate their intent and plans clearly. Results from the National Training Center (NTC) indicate that units training there frequently fail in this area.

The language of fire support is precise, and when a commander gives guidance to his FSO, or the FSO backbriefs him, both must understand the definitions of the terms they are using, or risk miscommunication.

If you are a maneuver commander, the following examination of a portion of the language of fire planning and methods of engagement—along with the nuances of these terms as they affect synchronization and the effects of indirect fires—may prove helpful.

(These are relatively narrow subjects dealing primarily with execution. A complete discussion of synchronizing fire support requires a full examination of fire planning as it applies to all battle operating systems.)

Fire Planning

Targets can be divided into two general categories, planned targets and targets of opportunity. Planned targets can be either *scheduled* or *on call*. While scheduled and on call targets make up two separate categories of planned targets, schedules of fire can also be executed on call.

Scheduled targets can be single targets or a collection of targets assembled as target *groups*, *series*, *programs*, *preparations*, or *counter-preparations*. You can slate the execution either for a specific time (such as 0900 hours), a relative time (such as "10 minutes from my mark"), an event (such as when crossing the line of departure or a phase line), or "on call," in which case the term "scheduled" refers to a predetermined sequence for engaging the targets. If needed, any single target

within the schedule can be treated as an on-call target.

A common type of schedule you can request or direct is the *group*, which is defined as two or more targets to be fired at simultaneously. If you direct that a group of targets be planned, or if your FSO includes a group in his plan, these are some of the factors you should consider.

A group is two or more targets, but how many more? And how do you know how many is too many? The answer, of course, depends upon your analysis of METT-T (mission, enemy, troops available, terrain, and time).

For purposes of this discussion, let us assume you command a heavy brigade supported by a direct support artillery battalion and are defending against a motorized rifle division.

First, consider the nature of the targets and the effect you hope to achieve. If the target is the attacking BMPs and T-72 tanks of a first echelon motorized rifle battalion and your intent is to *destroy* it (to obtain 30 percent casualties, as defined in fire support terminology), you are setting yourself up for disappointment from the outset. To get this type of effect against this type of target with DPICMs (dual purpose improved conventional munitions), you will need to mass your field artillery fires, preferably at a point where you have stacked the attacking echelon up at an obstacle, and fire multiple battalion volleys at it.

When you specified "group," you really said "simultaneous attack of targets." With a *simultaneous* attack of targets, you will not achieve mass to your full potential. Of course, if you have a reinforcing artillery battalion in addition to the DS battalion, you will have a better chance, assuming all of the batteries will be available. In this case, a group consisting of two targets may work, assuming the enemy stays in the target area long enough to receive the multiple battalion volleys that will be required.

If your intent is to *neutralize* the enemy battalion (10 percent casualties, by fire support definition) instead of *destroy*-

ing it, a group is closer to a workable solution. If your intent is to *suppress* it, however, a group consisting of three or four targets (enough to cover the target area) may be ideal. One battery per target should be enough.

The point is that groups, by definition, do not promote mass. If the nature of a target requires massed indirect fires to achieve the desired effect, you should consider some other targeting technique.

When executing groups during your training exercises, keep in mind a recurring problem that has been observed at the NTC. As often as not, when a commander plans a group on an avenue of approach or on templated enemy positions, he or his FSO tends to call for the entire group, even though one or more of the targets in it will have no actual effect on the enemy. Train your observers to call only for those targets that will have an effect.

When you need to attack multiple targets in a relatively short period, and when mass is necessary to achieve the required effects, consider using a *series*. For our discussion, the prime portion of the definition of a series is two or more targets to be fired *sequentially*, and you can determine the sequence of attack as part of your fire plan. If the schedule is set up so that there is one minute between targets (the sustained rate of fire and shift time for the M109A2/3 howitzer), the battalion can mass on each target.

COMPARISON

For purposes of comparison, assume that you have three targets you would like to incorporate into either a group or a series to compress execution time. A total of three battalion volleys (or nine battery volleys) can be fired, with your constraint being either the controlled supply rate or the time available. All three batteries of the artillery battalion are available. In either case—group or series—the minimum time lapse between the arrival on target of the first volley and the arrival of the last is two minutes at the sustained rate of fire. The difference between them is in their effects.

If you use a group, the three targets will be fired simultaneously and each will receive three battery volleys. If you use a series, each target can receive a battalion volley. A series exploits mass and surprise and is more destructive, while a group extends the effects over a longer period on each target and provides suppressive effects on all three targets at the same time. In either case, the time required to complete the attack of all three targets is a fraction of the time needed to fire on the targets if they were set up as separate, on-call targets.

Experience at the NTC indicates that about six minutes of processing time is the average for on-call missions. Given this factor, and assuming each target mentioned above was engaged by a single battalion volley, 18 or 19 minutes would be required to complete the mission. Using an on-call group or series, this time could be cut to about eight minutes (six minutes for processing and two minutes for the delivery of fires).

Series have applications in both offensive and defensive

situations that require mass and compressed engagement times. A series is an ideal targeting technique for bringing maximum destructive power to bear against a static, defending enemy.

During defensive operations, series can be effective when they are planned along an avenue of approach, with the individual targets planned at intervals consistent with the anticipated enemy rate and direction of movement and the weapon system's rate of fire and "shift time." (Shift time is the time required to shift from one target to the next. In the case of the M109, the shift time equals the sustained rate of fire.)

To offset the loss of flexibility that may be associated with using a series, pay particular attention to the following techniques:

- Against a moving enemy, timing the initiation of a series is critical. Given six minutes of mission processing time (a time factor that depends on the artillery battalion's state of training and other variables), and assuming the enemy is moving at one kilometer every three minutes, the trigger line has to be at least 2,000 meters in front of the first target. The observer must be positioned so that he can see both the trigger line and the target area. The possibility of visual obscuration must also be considered.

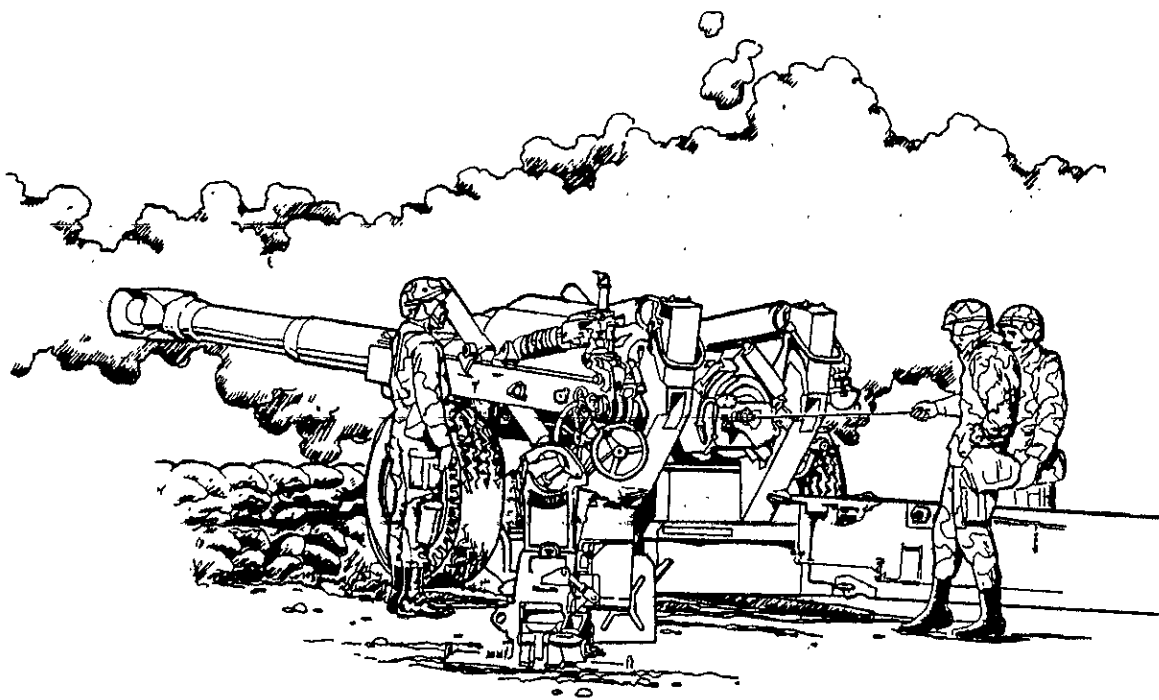
- If the enemy is not detected until after he has passed the trigger line, you can still use a series by deleting the first target during the call for fire and timing the initiation of the series with the enemy's arrival at the second target.

- Assuming you are firing multiple volleys at each target and the enemy moves faster than you had expected, or you are simply behind the target, give the command "cease loading" on the current target, and direct the guns to fire on the next one.

- If the enemy does not go where you thought he would and, as a result, the rest of the series will have no effect on him, give the commands "cease loading" and "end of mission." "Cease loading" allows the guns to go ahead and fire the rounds that have already been rammed, and rounds will continue to hit for 30 to 40 seconds (the time of flight plus about 10 seconds).

Do not give the command "check firing" unless the indirect fires pose a hazard to friendly troops. A "check firing" command immediately ends firing and can put the howitzers out of action while the crews remove any projectiles that have already been rammed. Because a howitzer does not have an extractor, the crew must assemble a long rammer staff and punch the round out from the muzzle end. This process is not only time consuming, it usually damages the rotating band on the projectile and renders it unserviceable.

In some cases the techniques of series and groups can be applied to the same targets. For example, if a motorized rifle company attacks and you have been able to locate two of the platoons and the combat outpost, you can target each platoon and the outpost using a series to mass fires successively on each target. In another case, as your front line of troops begins to approach the maximum effective range of the enemy's direct fire weapons, you can fire on all or part of the targets as a group to suppress him while you maneuver to complete his



destruction with direct fires.

Programs can combine the characteristics of both series and groups, but they are distinguished by the fact that some programs address targets of a similar nature, such as a suppression of enemy air defense (SEAD) weapons or a counter-battery program.

Preparations are scheduled by a time-proved three-phase system in which the enemy's indirect fire units and artillery headquarters are attacked in Phase 1; his C3 (command, control, and communications), reserves, logistics, and assembly areas in Phase 2; and his forward maneuver elements in the third and final phase. This sequence considers his reaction and recovery time and saves the attack of his forward elements until last to reduce the time between the completion of the preparation and your attack.

Counter-preparations can be planned to support your defense, and they are scheduled in two phases. The enemy's indirect fire assets and forward elements are attacked in Phase 1 and his C3, logistics, reserves, and assembly areas in Phase 2. A properly timed counter-preparation should be fired just before the enemy's preparation. Therein is the challenge. Detecting that critical moment requires an intense and dedicated effort on the part of the S-2 and the fire support coordinator (FSCOORD). Properly timed, executed, and supported by good target intelligence, counter-preparations can be tremendously successful.

The term *priority target* often leads to misunderstanding. In its pure definition, it simply means that a mortar platoon or an artillery battery will be laid on that target when not otherwise involved in a fire mission. You must consider the effects you require on your highest priority target and the actual number of firing units you expect to have consistently available during each phase of the operation. Depending on the nature or size of the target, all of your available assets may be required to mass their fires. If you are not specific in your in-

structions, you may find that your priority targets are engaged in a timely manner but with insufficient firepower to get the results you want.

Two other terms that are often misused or misunderstood are *TRP* and *register*. A TRP (target reference point) is not a target and is not targeted unless an effort is made to do so. If a target is planned at a TRP, it is identified by a target number through fire direction center channels just like any other target. Adjusting fires before execution is *adjusting*, not *registering*. Final protective fires are a good example of targets that should be adjusted in advance.

Registering is computing the difference between the theoretical fire direction solution and the actual solution that is needed to hit a target, given the current weather, undetected battery position area survey errors, and deviations from standard or previously measured muzzle velocities.

Once the registration correction is determined, it is included in all of the subsequent fire direction computations until circumstances dictate an updated registration. The registration point (target) must therefore be located with survey accuracy to avoid a location error that would be a part of all subsequent computations.

Methods of Engagement

Various terms and phrases that are used incorrectly in methods of engagement can also affect the flexibility, responsiveness, and synchronization of supporting mortars and field artillery pieces.

Unless otherwise stated in the call for fire, the method of engagement is *when ready*. This means that each howitzer will fire as soon as the chief of section has verified that the correct data has been applied. *When ready* has the advantage of expediting a response; the first rounds are fired as quickly as

possible. But there are also disadvantages:

First, neither you nor the FSO knows precisely when the first volley will be fired. You find out after the fact with the announcement of "shot" by the FDC. This problem is further complicated by the fact that other fire missions may be ahead of yours. This target "queue" can further delay your mission unless the fire support plan gives priority to you, the nature of your target, or both. This uncertainty works against synchronization and in fast-moving offensive operations can contribute to fratricide.

Second, as previously stated, mass has a direct bearing on the effects of the fire. Senior observer-controllers and trainers at the NTC have noted that mass is more than a number of rounds hitting in the same area. Mass is achieved only when all of those rounds hit in a relatively short time. Compacting the time of impact increases both the surprise and destructive effects. Conversely, it can be argued that stretching out the time of impact can spread the effect of suppression over a longer period.

If you need to control the exact time volleys are fired in order to synchronize fires, you have several options. First, you can use the previously mentioned technique of scheduled fires and tie their execution to a specific time, although this may not give you the flexibility you need. Other methods of engagement can be included in the call for fire that, for a price, can give you this control—*time on target*, *at my command*, and *at my command; do not load*.

In using these methods to achieve responsiveness, you lose some flexibility, because the firing units will have to have time to prepare and synchronize these missions internally. For purposes of the discussion that follows, "responsiveness" is defined as a measure that ensures that all the rounds in the first volley hit at the time desired, while "flexibility" is a measure of the firing units' ability to handle a wider array of missions, and in fact a greater number of fire missions during a given time period.

Time on target (TOT) exploits the factor of surprise to its fullest potential since all of the rounds will hit within plus or minus three seconds of the specified time. The destructive effects of the fire are greater when surprise is achieved, and the timing is precise. This technique can be applied either to multiple targets or to a single target to exploit mass.

In computing data for a TOT, the time of flight for each weapon must be calculated, because time of flight will vary for each weapon depending on its range relative to the target. Each weapon is then fired at a slightly different time to achieve simultaneous impact. Given the computations required, 10 minutes of processing time—including time of flight—is a reasonable estimate of the advanced warning or lead time required to fire this kind of mission. Again, a firing unit's proficiency as well as the type of computers used in the FDC will

have a bearing on processing time.

Once you have given the call for fire and have specified TOT as the method of engagement, you can change the time of impact to meet the needs of a fluid maneuver situation in one of two ways: If you need the fires immediately, give the command *cancel time on target*, and the method of engagement will automatically default to *when ready*. All of the guns that are ready will fire immediately. If you still want to control the approximate time of impact but want to change it, you have the option of giving the command *cancel time on target; fire at my command*.

At my command means the mission will be fired on your command and the rounds will hit at approximately the time of flight plus five to ten seconds for communications. When you specify *at my command*, the FDC will notify you when all the participating batteries or platoons are ready. Again, if needed, you can expedite the impact of the first rounds by cancelling this method of engagement and allowing the mission to be fired *when ready*. Because the time of flight of each individual weapon does not have to be determined and applied, less preparation time is required. You therefore have more flexibility than you would have with a TOT, but the message *ready* is tied to the slowest section participating in the mission.

A word of caution is in order when considering *at my command* and *time on target* missions. When an artillery gun crew reports *ready*, it has mated and set the fuse, rammed the round, and cut the propelling charge. The weapon is laid and ready to fire. All that remains is to pull the lanyard. If you give *end of mission* before the first volley is fired, again you put the gun out of action for a time, because a change of projectile, fuse, fuse setting, or propelling charge may be required for the next mission. In addition, safety concerns will not allow a crew to leave the round in a hot tube.

You can still control the execution time, but to a slightly lesser extent, by using *at my command* followed by *do not load*. The gun crews, when they get that command, take all of the same actions except that they leave the rounds on the loading trays until the fire command is given. Although this requires four or five seconds of additional response time, you retain greater flexibility.

Synchronizing fire support with maneuver is a complex task, but it can be made less so if a commander and his FSO speak the same language and fully appreciate the nuances of targeting techniques and methods of engagement.

Lieutenant Colonel Robert D. Sander, a Field Artillery officer, is assigned to the Combined Arms and Tactics Department, U.S. Army Infantry School. He previously commanded the 4th Battalion, 5th Field Artillery, 1st Infantry Division. He has also served as executive officer, S-3, and chief of the fire support element with the 5th Infantry Division Artillery, and as executive officer, 2d Battalion, 81st Field Artillery, 8th Infantry Division. As an aviator, he served with the 102nd Air Assault Division in Vietnam.

